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EXAMINER	
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ART UNIT	PAPER NUMBER
1651	

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Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

Office Action Summary	Application No.	Applicant(s)	
	10/722,777	MARSHALL, ROBERT J.	
	Examiner	Art Unit	
	THANE UNDERDAHL	1651	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE *3* MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☒ Responsive to communication(s) filed on *30 November 2007*.

2a)☐ This action is **FINAL**. 2b)☒ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) *22,24 and 40* is/are pending in the application.

4a) Of the above claim(s) *13-19* is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) *4-12, 20-22 and 24* is/are rejected.

7)☐ Claim(s) _____ is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☐ The specification is objected to by the Examiner.

10)☐ The drawing(s) filed on _____ is/are: a)☐ accepted or b)☐ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

12)☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☐ All b)☐ Some * c)☐ None of:

1.☐ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____.

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1) ☒ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☐ Information Disclosure Statement(s) (PTO/SB/08) Paper No(s)/Mail Date _____.
4) ☐ Interview Summary (PTO-413) Paper No(s)/Mail Date. _____.
5) ☐ Notice of Informal Patent Application
6) ☐ Other: _____.

DETAILED ACTION

Continued Examination Under 37 CFR 1.114

A request for continued examination under 37 CFR 1.114, including the fee set forth in 37 CFR 1.17(e), was filed in this application after final rejection. Since this application is eligible for continued examination under 37 CFR 1.114, and the fee set forth in 37 CFR 1.17(e) has been timely paid, the finality of the previous Office action has been withdrawn pursuant to 37 CFR 1.114. Applicant's submission filed on 11/30/07 has been entered.

This Office Action is in response to the Applicant's request for continued examination received 11/30/07. Claims 4-22 and 24 are pending. Claims 13-19 are withdrawn. Claims 1-3 and 23 are cancelled. Claims 4-10, 12, 13, 18, 20-22 have been amended. Claim 24 is new.

Claim Rejections - 35 USC § 112

The following is a quotation of the second paragraph of 35 U.S.C. 112:

> The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention.

Claims 4-10, 12 and 18, 20-22 are rejected under 35 U.S.C. 112, second paragraph, as failing to set forth the subject matter which applicant(s) regard as their invention. These claims either contain or depend from claims that contain the limitation of "stabilized dihydrolipoic acid" (**DHLA**). After considering the specification as well as the article submitted in the IDS ("Stabilized DHLA" by Marshall). It is unclear what exactly what is the structural characteristic imparted by the applicant that makes DHLA more stable than they typical molecule of DHLA. In the interest of compact prosecution,

the claim will read on any probiotic organism that can produce DHLA, until the Applicant provides some structural significance to the contrary. Furthermore the Applicant does not distinguish how the bacterial species in the dependant claims produce the "stabilized DHLA" as compared to the DHLA produced by the common strains of the same species.

Also claim 22 is indefinite since it depends from itself. In the interest of compact prosecution, claim 22 will depend from claim 1.

Response to Applicant's Arguments

In the response submitted by the Applicant, the 35 U.S.C § 103 (a) or 102(a) (b) (c) rejection of amended claims 4-10 and 20-22 over Hastings et al. in view of Hermann et al. were considered but not found persuasive.

The Applicant's primary argument is that the above references do not teach a "microbial culture media broth" that includes a "live stabilized dihydrolipoic acid producing probiotic organism". However, as mentioned above the Applicant does not clearly define what differentiates their "stabilized DHLA" from DHLA produced by common strains of bacteria via their metabolic process. Also the Applicant does not define that stabilized DHLA is actually present in the culture media, only that a probiotic organism that produces DHLA is in the media. Therefore any probiotic that produces DHLA via its routine metabolic process reads on the claim. Also since compositions are defined by their components and not by their intended use, the limitations of microbiological culture media broth are simply a composition that comprises at least one probiotic organism, R-lipoic acid and a nutritive agent. The intended use that it must be

used specifically for culture media is given little patentable weight since a culture media is a very broad phrase that can read on common items such as fermentable juices such as apple or grape as well as milk (i.e. yogurt or simply spoiled milk or spoiled butter). From the Office Action it is clear that Hastings et al. teach a composition containing a probiotic, lipoic acid and a nutritive agent.

Bacterial probiotics undergo α-keto oxidation during their metabolism and it is there that DHLA is formed as supported by references by Reed et al. (page 38332 Figure 2, see $LipS_2$) and the article Pyruvate Dehydrogenase & Krebs Cycle (pages 3 and 4, Figure A) clarifies that the steps of the α-keto oxidation does indeed produce DHLA via the cascading enzyme system of Pyruvate Dehydrogenase (E1 for both references), Dihydrolipoyl Transacetylase (Abbreviated E2 for both references) and Dihydrolipoyl Dehydrogenase (Abbreviated E2 for both references). The Figure A marked on page 4 of the Pyruvate Dehydrogenase & Krebs Cycle article is provided to clarify that $LipS_2$ and $Lip(SH)_2$ are indeed lipoic acid and dihydrolipoic acid respectively by providing further details of the reactions involved in E2. Therefore it would have been obvious to someone skilled in the art that the probiotic organisms used by Hastings et al. are indeed DHLA producing. And since they already teach their composition can be made into a broth (see liquid composition of Example 1 in Hastings et al.) with a nutritive agent and lipoic acid the teachings of Hastings et al. still apply to the amended claims. Furthermore, while Hastings et al. does not

explicitly teach the R enatiomer of lipoic acid this limitation is taught by Hermann et al. as covered in more detail in the following restatement of the rejection.

The Applicant argues that the combination of Hastings with Hermann is improper since both their teachings are drawn to a item for human consumption. However as mentioned above, compositions are defined by their components and not their intended use such as a "microbiological culture media broth".

Therefore the rejection stands and is repeated below with modifications to address the newly amended claims.

Claim Rejections - 35 USC § 103

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

Claims 4-10 and 20-22 remain rejected under 35 U.S.C. 103(a) as being unpatentable over Hastings et al. (U.S. Patent # 6368617) in view of Hermann et al. (European Journal of Pharmaceutical Sciences, 1996) with additional support provided by Pyruvate Dehydrogenase & Krebs Cycle (1998) and Reed (JBC, 2001).

These claims 4-10 are drawn to a microbiological broth comprising three parts a) at least one live stabilized dihydrolipoic acid producing probiotic organism, b) R-Lipoic acid, and c) at least one nutritive agent. The probiotic organism can be from

Lactobacillus, *Bifidobacterium*, *Enterococcus*, *Streptococcus thermophilus*. More specifically the microorganisms can be selected from the group consisting of: *L. acidiophilus, L. paracasei, L. fermentum, L. rhamnosus, L. johnsonii, L. plantarum, L. reuteri, L. salivarius, L. brevis, L. bulgaricus, L. helveticus, L. grasseri, L. casei, L. lactis, B. bifidum, B. breve, B. infantis, B. longum, B. lactis, E. faecium,* and *E. faecalis*.

Claim 21 is an additional composition comprising *B. longum, L. acidiophilus, E. faecium, Streptococcus thermophilus* and R-Lipoic acid, and at least one nutritive agent. Claim 22 depends from claim 21 and further comprises *B. breve, B. infantis, L. casei, L. fermentum, L. helveticus, and L. plantarum.*

Claim 20 depends from claim 4 and further limits that the probiotic organism for use in a medicament or a nutritional supplement.

Hastings et al. teach a composition in claim 11 (col 7) comprising a probiotic blend of *B. bifidum* and *L. acidophilus*, a nutrient substance such as omega-3 fatty acids and saccharides, and can further comprise alpha-lipoic acid (claim 15, col 8). This composition can be formulated into a liquid broth (Example 1). While Hastings does not teach solely the (R) enantiomer of lipoic acid, it is obvious to use this enantiomer from the teachings of Hermann et al.

Herman et al. teach that of the racemic forms of alpha lipoic acid, the (R) enantiomer has greater bioavailablity than the (S) enantiomer (Abstract, last 3 lines). One of ordinary skill in the art that knew of the teachings of Hermann et al. would recognize using the enantiomerically pure (R) form of lipoic acid would improve the composition of Hastings et al. The motivation is provided by Hastings et al. who show

that the bioavailability of R-lipoic acid is superior to S-lipoic acid. The reasonable expectation of success is provided by Hastings et al. who show that the composition which already includes R-lipoic in a racemic mix with S-lipoic acid can be formulated.

Hastings et al. also does not teach a composition containing all the bacteria listed in claims 21 or 22. However these bacteria are well known in the art as probiotic bacteria as supported by Mercenier et al. (Current Pharm. Design Jan. 2003) and Dunne et al. (Antonie van Leeuwnhoek, 1999). Hastings et al. already uses a probiotic blend of *B. bifidum* and *L. acidophilus*. According to M.P.E.P. § 2144.06:

> "It is prima facie obvious to combine two compositions each of which is taught by the prior art to be useful for the same purpose, in order to form a third composition to be used for the very same purpose.... [T]he idea of combining them flows logically from their having been individually taught in the prior art."

Since Hastings et al. already adds a probiotic blend to their composition it would be *prima facia* obvious to add other probiotic organisms to their invention. Therefore claims 4-10 and 20-22 remain *prima facia* obvious over Hastings et al. in view of Hermann et al.

In the response submitted by the Applicant, the 35 U.S.C § 103 (a) rejection of claims 11 and 12 over Hastings et al. and Hermann et al. as applied to the rejections of claims 4-10 and 20-22 above and in further view of Reddy et al. were considered but not found persuasive.

Applicants rely on the arguments used in traversing the above rejection to also traverse this rejection without additional arguments. However, as explained above, the previous rejection stands. Therefore, the response set forth above to arguments also applies to this rejection as well as new claim 24.

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

Claims 11 and 12 remain rejected and new claim 24 is rejected under 35 U.S.C. 103(a) as being unpatentable over Hastings et al. and Hermann et al. as applied to the rejections of claims 4-10 and 20-22 above and in further view of Reddy et al. (U.S. Patent # 6,080,401).

These claims further limit the composition of claim 4 by including turmeric rhizome (*curcuma longa*) as the nutritive agent. Also claim 24 adds the limitation that the probiotic organism converts R-lipoic acid via incubation.

As mentioned in the reference above, Hastings et al. in view of Hermann et al. teach a composition that comprises at least one live probiotic organism, R-lipoic acid and a nutritive agent. The two references with the support from Reed and Pyruvate Dehydrogenase & Krebs Cycle teach that DHLA is indeed produced from R-lipoic acid in the α-keto oxidation process of the probiotic. However these two references do

not specifically teach the addition of *curcuma longa* to their composition. This is taught by Reddy et al.

Reddy et al. teach a composition that, like Hastings et al., includes a probiotic blend of *Bifidobacterium* and *Lactobacillus* (Col 9, lines 33-44) to assist in weight loss and dieting (col 4, line 12), which is the same reason as Hastings et al. Reddy et al. also adds *Curcuma longa* to the composition (col 8, line 5) as a hepatic stimulant. It would have been obvious to someone skilled in the art to add *Curcuma longa* to the composition of Hastings et al. since both inventions share a common goal for a composition to assist in a diet and also share common materials such as a probiotic blend (see M.P.E.P. § 2144.06).

While the art above teaches the components of the composition of claim 4 they do not teach the amounts limited by claim 12. However, M.P.E.P. § 2144.05 II states:

> Generally, differences in concentration or temperature will not support the patentability of subject matter encompassed by the prior art unless there is evidence indicating such concentration or temperature is critical.

Absent any teaching of criticality by the applicant concerning the amounts listed in claim 12 for the composition of claim 4, it would be *prima facie* obvious that one of ordinary skill in the art would recognize that the amounts listed in claim 12 are result effective variables whose ratio and concentration are a matter of routine optimization.

Therefore claims 11, 12 and new claim 24 remain *prima facia* obvious over Hastings et al. and Hermann et al. in view of Reddy et al.

In summary no claims, as written, are allowed for this application.

In response to this office action the applicant should specifically point out the support for any amendments made to the disclosure, including the claims (MPEP 714.02 and 2163.06). Due to the procedure outlined in MPEP § 2163.06 for interpreting claims, it is noted that other art may be applicable under 35 U.S.C. § 102 or 35 U.S.C. § 103(a) once the aforementioned issue(s) is/are addressed.

Applicant is requested to provide a list of all copending U.S. applications that set forth similar subject matter to the present claims. A copy of such copending claims is requested in response to this Office action.

CONTACT INFORMATION

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Thane Underdahl whose telephone number is (571) 272-9042. The examiner can normally be reached Monday through Thursday, 8:00 to 17:00 EST.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Michael Wityshyn can be reached at (571) 272-0926. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR.

Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see http://pair-direct.uspto.gov. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

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